NEWSLETTER OF THE AREA PLANNING BOARD OF PALM BEACH COUNTY 2300 PALM BEACH LAKES BLVD, WEST PALM BEACH, FL. 33409

apb FORUM

VOLUME 12 NUMBER 3 MARCH 1978

WASTEWATER TREATMENT PLANT REPLACES LAKE WORTH OUTFALL

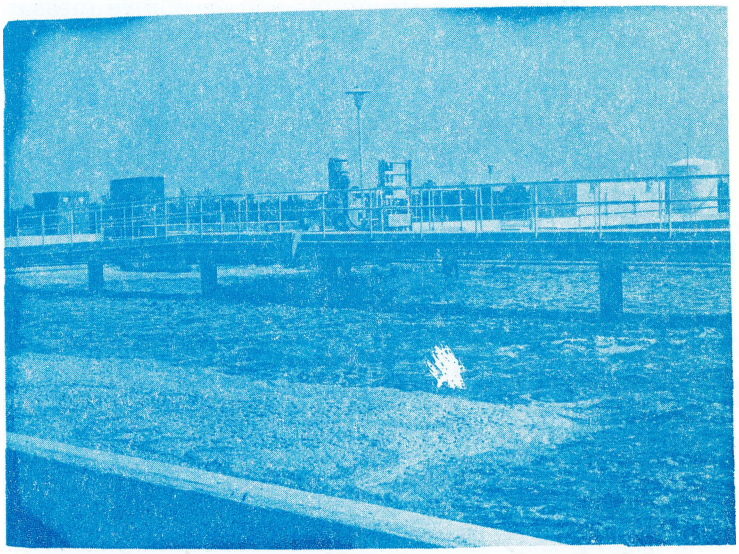
On February 12, 1978, the $29 million East Central Facility of the Palm Beach Central Regional Wastewater Treatment system was formally dedicated. An immediate capacity of 20 million gallons a day is now available - 16 million for the City of West Palm Beach and 4 million for the Town of Palm Beach, yet to be hooked up to the plant. An additional 24 million gallons capacity is being constructed to later serve Riviera Beach, Lake Worth and some parts of unincorporated county. This will bring the plant investment, which is about 75 per cent federally funded, up to $44 million and is projected to be adequate to at least the year 2000. Plant design allows for a possible ultimate addition of 20 million gallons after that date. All of the treated wastewater is being injected into 3,500-foot deep wells, a method among the latest technological developments. As an extra "recycling" feature, the sludge left over after treatment of the water is being spread on land at the plant site, to be used for growing sod.

Prior to the ceremonies at the 300-acre plant site, just off Haverhill Road in suburban West Palm Beach, officials gathered downtown for the symbolic shutoff of the city's 20-year-old sewage outfall into Lake Worth at 3rd Street. Actually, this "point source" of pollution had been eliminated in December 1977. Although no definitive studies have been done on the lake's damage from sewage, it is generally agreed that its water quality can now be expected to gradually improve.

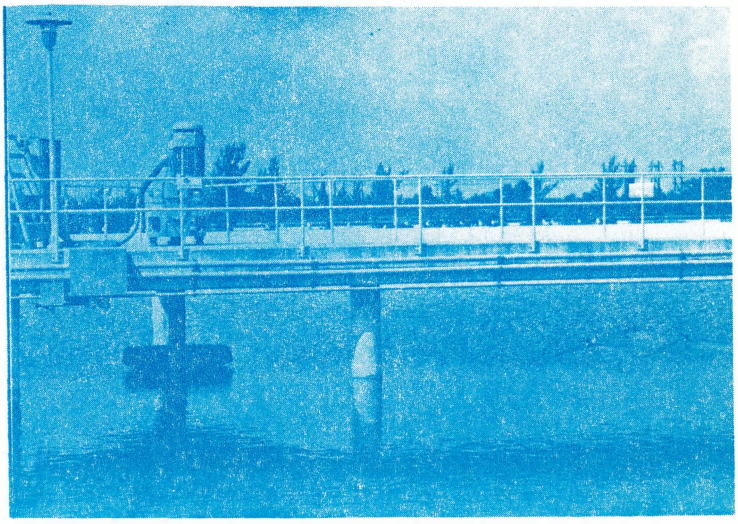
RELEVANT QUOTE

"The whole idea is to get the sewage away from the water."

West Palm Beach Mayor
M. P. "Ham" Anthony
(quoted in Palm Beach
Times, Feb. 13, 1978)



AERATION BASIN in action at new facility shows agitated wastewater with patches of scum collecting on surface.



DUCKS SWIM beneath gull-lined walkway at another basin while the aerating is not turned on.

The preparation of this document was financed in part through a Water Quality Management Technical Assistance Planning Grant from the Environmental Protection Agency under provisions of Section 208 of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500). This public document was promulgated at this issue's cost of $191 or $.32 per copy, to inform the public concerning water quality issues.

Output Number	Title	Contents	Author	Completion	Committee Reviews
101	Composite Enumeration of Existing Land Development, Planning and Other Nonstructural Controls	Identifies and categorizes nonstructural controls that have potential use in achieving water quality goals.	APB	Jan.1978	Feb.1978
110	Interregional Problem Analysis	Summarizes water quality issues that transcend study area boundaries; reviews implications for management.	HSMM	Nov. 1977	Dec.1977
111	Preliminary Management Network Options Report	Examines in greater detail the feasibility of implementing eight previously presented options.	HSMM	Nov.1977	Dec.1977
201	Point Sources That May Be Subject to the Extended NPSDES Permit Program	Describes background of permit regulations and identifies areas that may be affected.	APB	Sept.1977	Oct.1977
204	Calculation of Nonpoint Source Loadings	Establishes methods toward measuring agricultural wasteloads when accurate data become available.	GTI	Sept.1977	Oct.1977
213	Point Source and On-Lot Disposal Systems: Priorities and Elimination	Outlines priority ranking for eliminating on-lot systems and point discharges of domestic waste.	APB	Oct.1977	Dec.1977
215	Waste Management Techniques Analysis	Summarizes sludge generation, disposal practices and alternative techniques.	GTI	Sept.1977	Oct.1977
301	Water Quality Issues, Needs, Problems and Objectives	Categorizes all surface and groundwater, identifies water sources, uses and problems, and assesses goals.	GTI	Aug.1977	Oct.1977
302a	Agricultural Runoff Monitoring Program Water Quality Sampling Results	Presents voluminous sampling data in tabular form, with accompanying graphs, to shed light on water quality in the agricultural Glades areas.	APB	Jan.1978	Feb.1978
303	Mass Balance Analysis - Urban Runoff	Discusses the results of comparing runoff input and output on a mass basis within Canal C-51 during storms.	GTI	Jan.1978	Feb.1978
305	Estimation of Urban Runoff Non-Point Source Loadings	Uses computer model to project non-point pollutant loads resulting from urban development.	SFWMD	Oct.1977	Dec.1977
307	Total Allowable Non-Point Source Loadings	Establishes total maximum loading levels for organics and nutrients that will allow standards to be met.	GTI	Jan.1978	Feb.1978
401c	Plans and Programs Affecting Growth in Palm Beach County	Lists and describes the area's plans and programs at all levels that could influence development.	APB	Jan.1978	Feb.1978
403	Water Quality-Land Use Relationships	Attempts a comprehensive picture of effects of land uses on adjacent receiving waters.	APB	Dec.1977	Feb.1978
407	Base Land Use Projections	Gives estimated future use of acreage in each of 5 urban and 7 non-urban categories, per 5-year increments through the year 2000.	APB	Nov.1977	Dec.1977

THE 201 FACILITIES PLANS

...WHERE THE FIVE REGIONS STAND

The five 201 regions in our study area, created under the same Public Law 92-500 that created the 208 program, are mandated to generate acceptable 20-year plans for providing areawide wastewater facilities. The following are thumbnail summaries of their progress at this writing. (Largest municipalities within each region are indicated.)

NORTHERN REGION (Jupiter, Tequesta, Juno Beach)

The Northern 201 Region, more commonly known as the Loxahatchee River Environmental Control District (ENCON), anticipates dedication of its 4 million-gallon-a-day advanced wastewater treatment plant by late May 1978. ENCON proposes to eliminate 75 percent of all localized wastewater treatment plants within its region. It has taken two important steps in the past month toward the planning grant: staff attended a pre-application conference March 9 in Tallahassee with FDER and EPA Region IV; and at the end of the month, advertising was initiated for recruitment of consulting engineers.

CENTRAL REGION (West Palm Beach, Riviera Beach, Lake Worth, North Palm Beach, Palm Beach Gardens, Palm Beach)

Aside from the major progress described on the front page of this newsletter, the Central 201 Region was moving forward at this writing toward its final public hearing on the facilities plan. After that April 6 milestone, any comments gathered will be submitted to FDER, EPA and the municipalities involved for consideration in finalizing the plan. Furthermore, Central will be applying for Step 2 and Step 3 funds (for Century Village and other lateral hookups) in mid-April.

GLADES REGION (Belle Glade, Pahokee, South Bay)

The Glades 201 Regional Plan is being developed for completion and presentation in the very near future. Despite having to drop the land-spreading alternatives for lack of the state's long-delayed wasteload allocation guidelines, the plan is proceeding on the basis of the deep-well injection alternative.

SOUTH CENTRAL REGION (Delray Beach, Boynton Beach)

The South Central 201 Region now anticipates finishing its facilities plan by December 1978. A draft plan encompassing the regional needs has been completed and submitted, but this is to be revised due to changes in the population projections involved. A grant to fund the first half of the revision work has been signed by EPA. The proposed plan is to phase out all local treatment plants by 1981.

SOUTHERN REGION (Boca Raton)

The Southern 201 Region is revising its Step 1 application and will be going forward with a "piggyback" Environmental Impact Statement (EIS) - to be done concurrently with the facilities planning, rather than afterward, thus saving about a year's time. The region has completed advertising for EIS consultants and is in the process of reviewing the qualifications and experience of applicant firms.

REDUCING RUNOFF AT CONSTRUCTION SITES

Palm Beach County is having another "boom" cycle in building. According to the Area Planning Board's Research Section, permit totals - especially new residential construction - have soared the past two years, as dollar-value figures show:

	1975 Total	1976 Total	% Change	1977 Total	% Change
Single-family	$ 79,998,294	$137,022,992	+ 71.3	$264,167,009	+ 92.8
Multiple-family	44,115,222	70,949,377	+ 60.8	168,134,794	+137.0
Total dwellings	124,113,516	207,972,369	+ 67.6	432,301,803	+107.9

Since we can easily see the magnitude of construction activity, both by these figures and by any weekday drive around the area, the potential for runoff pollution of our waters is obviously great. In continuing the discussion of urban runoff started in the last 208 newsletter, this issue addresses the special problems and techniques of managing stormwater during the construction that is part and parcel of urbanization.

Before any specific measures are implemented for controlling sources of pollution from construction site activities, much can be done in the planning stages of projects to avoid many of these potential problems. Allowance should be made for unstable soils, climate, topography and for the productivity of the soil for vegetative recovery. An adequate plan should include prevention of sediment losses and reducing peak runoff. It should also include controls on the generation, accumulation, and runoff of oils, wastewaters, mineral salts, pesticides, fertilizers, solids, and organic materials from the site. Eventually, any controls proposed should be based on a knowledge of the soils, topography, geology, hydrology, and other pertinent factors relating to the site area. Fitting the construction site to the landscape can prevent potential pollution problems from arising.

Effective plans should consider proper scheduling and coordination of construction activities, and adequate maintenance of control measures. Practices that prevent transportation of sediments from a site area will also deter movement of many other pollutants. Pollutants carried in solution, however, will pass through sediment control defenses. Proper application of materials and good housekeeping practices should be used to regulate the release of runoff from a site under construction in order to prevent increased peak flows from eroding downstream channel areas. Consideration should always be made in designing stormwater management facilities so they might continue to be used after the project is completed.

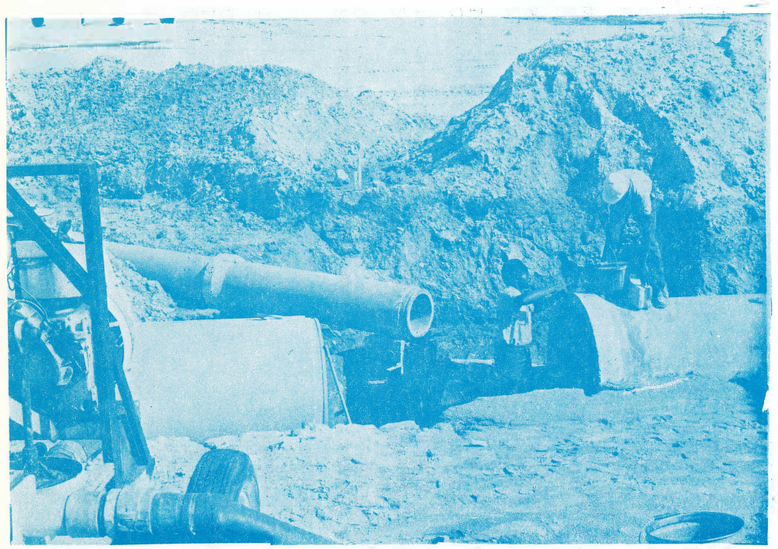
STRUCTURAL CONTROLS

There are essentially three basic measures for controlling pollutants from construction sites: preventing erosion of exposed soil surfaces; restricting the transport of eroded materials, and trapping sediments being transported. As much as 95 percent of the uncontrolled erosion which can occur at construction sites may be prevented using various combinations of these relatively simple and inexpensive control

Mulches - Plant residues, wheat or oat straw, hay, wood chips, bark and sawdust are mulches used along with seeding to aid the establishment of the vegetative cover. Mulches also can prevent erosion and runoff of sediments, reduce soil compaction and surface crusting, conserve soil moisture and minimize temperature changes in the ground surface. Mulch is often secured with asphalt emulsions or with netting. Hydromulching is a technique where wood chips are mixed with grass seed, fertilizer, and water to form a slurry which is then spread on denuded land. The wood chips tend to hold the soil and encourage the growth of grass.

Pervious Blankets - These are protective coverings for critical areas that are highly susceptible to erosion. They can be excelsior blankets, fiberglass matting, fiberglass spread by compressed air, jute netting and biodegradable sheet paper products. These materials conform well to ground irregularities and also restrict movement of runoff waters. Some method of ground fastening such as stapling is often required.

SOMETIMES IT'S QUITE A MESS in the process of improving storm drainage, as this scene at Lake Worth Rd. and Gulfstream Rd. shows.



WORKERS COMPLETE A LINK in the system being installed during March 1978 to handle storm drainage at the site of plaza and parking lot expansion next to Jefferson's store, Military Trail and Westgate Road.

Chemicals - Certain chemicals can be used to bind together particles of the soil and other foundation materials into a coherent mass that resists erosion and reduces evaporation losses. Some chemicals can combine organic mulch into a protective blanket. Each application should be carefully considered, as contamination of surface waters can occur from the use of some substances.

Dikes, Berms, and Ditches - Dikes and berms (linear ridges built of compacted earth or other materials) are used separately or together with ditches to intercept and diffuse runoff, to reduce slope lengths so that runoff is slower, and to move water to stable outlets at non-erosive velocities. They can also be used to protect the banks of a natural watercourse from site runoff.

Level Spreaders - These are outlet structures provided at the downstream end of diversion systems to convert concentrated runoff to sheetflow at non-erosive velocities. A stabilized vegetated area should exist downslope of the spreader ditch.

Downdrains - Downdrains are used to convey storm runoff from the top of a slope to the bottom without causing erosion. Flexible downdrains consisting of conduits are used as temporary structures to prevent the erosion of slopes. A formal design is generally not required for these temporary installations. Care must be taken with the downstream discharges.

Chutes and Flumes - These are rigid channels constructed of concrete, asphalt, or comparable material and used to conduct storm runoff downslope. They require a formal design based on expected

Waterways or Outlets - These structures are wide, shallow, natural or constructed channels which are shaped, graded, and vegetated for the purpose of conveying and disposing of excess runoff. They are designed based on expected runoff flows and usually require a well stabilized outlet area. Jute netting is often used to stabilize the sides of the waterway.

Grade Stabilizing Structures - These reduce the stage of natural or artificial channels to prevent runoff from reaching excessive erosive velocities. They are permanent and expensive and are only used where other methods are unsuitable. Examples are check dams, drop or overflow structures and various forms of erosion checks.

Filter Berms - These berms are previous barriers composed of gravel, crushed rocks, or similar materials. They temporarily detain runoff water to allow sediment to deposit and act as filters to allow the flow to pass through them but not the sediment being transported.

Sandbag or Straw-Bale Barriers - These can act as diversion or detention facilities and are used to protect other structures such as inlets from sediment-laden flows. The water passes through the straw bales but the sediment is retained. They are mostly used in small drainage areas of approximately 1/2 acre. The bales must be securely staked and water prevented from flowing beneath them.

viding protective covering over bared soils and seeded areas, and protecting existing vegetation or replanting exposed surfaces. Structures with or without the use of vegetation have been devised to reduce or prevent excessive erosion and even to induce sediment depositions by slowing down runoff water. They intercept, divert, and dissipate the energy of runoff; reduce hydraulic gradients; prevent concentration of flows; retard and filter runoff; and contain concentrated flows in non-erodible channels. A formal design is generally required only for permanent erosion and sediment control structures. The expected life of the structure, the maintenance requirements, the potential hazard from failure and other factors are more often considered in the selection of temporary installations.

Some structures are specifically designed to trap sediments - to stop materials being transported by runoff water and prevent them from leaving the site area. Many other structures and vegetative measures also act, to a limited extent, as sediment traps.

Vegetation - The most economical control generally is to preserve as much of the existing vegetation as possible. Bared areas should be revegetated as quickly as possible either with temporary growth or the permanent final growth planned. Maintenance of vegetation should be conducted regularly.

EVALUATION OF ANTI-RUNOFF DEVICES

(Grading: G - Good/Low Cost; F - Fair/Reasonable Cost; P - Poor/High Cost)

	Water Quality Benefits from the Reduction of				
	Sediments	Dissolved Contaminants	Peak Flows	Cost	Application
Vegetation	G	F	F	F	All sloping bared areas
Mulches	F	P	F	F	All areas subject to erosion
Pervious Blankets	G	P	F	P	Very erosive areas
Chemicals	F	P	P	F	Easily erosive soils
Dikes/Berms/Ditches	G	P	G	F	Areas of impervious soils
Level Spreaders	F	P	G	G	In conjunction with a ditch system
Downdrains	G	P	[illegible]	P	Steep embankments
Chutes and Flumes	G	P	[illegible]	P	Steep embankments with large flows
Waterways	F	P	[illegible]	P	Transporting large flows overland
Grade Stabilizing Structures	F	P	[illegible]	P	In natural or artificial channels
Filter Berms	G	P	[illegible]	F	Around detention areas
Sandbag or Straw-Bale Barriers	G	P	[illegible]	F	Around catch basins and outlets
Culvert Risers	F	P	[illegible]	F	Attached to culverts
Detention Basins	G	P	[illegible]	F	Before the outfall from a construction area
Waste Collection	G	F		G	
Care with Fuels/Chemicals	P	G		G	

Sediment Detention Basins - These can be installed as temporary or permanent facilities. They usually consist of small compacted earth fill dams with a reservior excavated to provide embankment materials. Various outlet structures are used but they must ensure that sediments are deposited in the basin and not carried out through the structures. Careful engineering design is often required to ensure their effectiveness.

Culvert Risers - Culvert risers are perforated pipes forming the intake area of culverts. They temporarily pond water, enabling the sediment load to settle out. Gravel filters may be used around the perforated pipe.

WEST PALM BEACH VOTERS APPROVE $7 MILLION FOR STORM DRAINAGE WORKS

On Tuesday, March 14, City of West Palm Beach voters approved a total of $7,125,000 in storm drainage projects for a bond issue. This was more than half the overall total of $12,125,000 approved for city-wide improvements of all kinds. With this major outlay area citizens proved willing to deal with a costly water problem, at least on the quantity side. But the 208 program must ask, what are effects involved for water quality? Urban runoff is now recognized as a major contributor to non-point source pollution in Palm Beach County. The 208 staff have been in touch with Bill Goodloe, City Engineer, to help keep up the growing consciousness of this problem during the drainage projects, which Mr. Goodloe indicates will be phased over about three years to avoid too much disruption of city transportation and commerce. The very practices put forth in this newsletter to combat runoff damage during construction activity can be brought into play. Mr. Goodloe, who also chairs the 208 Policy Advisory Committee, points out that the city's already-effective street sweeping will be particularly important with these improvements possibly increasing the volume of water directed ultimately into Lake Worth through the storm sewer system. The existing sedimentation basin at Palm Harbor Marina is also likely to prove its worth all the more. Coordination with municipal and other projects this is one of the important roles the 208 program can play, both now during the study phase and later as the continuing management phase comes into being.

FUNDED PROJECTS

Storm Drainage and Paving:
- -Georgia Avenue from West Palm Beach Canal to Nottingham St. ($4,000,000)

Storm Drainage:
- -Palm Beach Lakes Boulevard from Florida East Coast Railway to Flagler Drive ($400,000)
- -Extension of 1st Street System from Dixie Highway to Rosemary St. ($275,000)
- -Pinewood Avenue from 45th St. to 59th St., and 59th St. from Pinewood to N. Dixie Hwy. ($500,000)
- -Okeechobee-Lakeview System improvement ($500,000)
- -Extension of 3rd St. System from Olive Avenue to Florida East Coast Railway ($400,000)
- -Extension of 15th St. System to Florida East Coast Railway ($600,000)
- -Extension of 23rd St. System from North Flag Drive to Florida East Coast Railway ($450,000)

This is the kind of flooding in the Georgia Avenue area that led voters to approve the money for improvements.

HOUSEKEEPING PRACTICES

Good erosion and sediment control in conjunction with management of stormwater runoff will prevent the movement of many pollutants other than sediments. However, those pollutants which are in solution or carried on fine-grained sediments may pass through all control measures and reach downstream water bodies. The only practical means of preventing these pollutants from reaching runoff waters is through the use of proper application techniques and "good housekeeping practices." Where pesticides are used, strict adherence to recommended practices should be required and particular attention should be given to storage and disposal of empty containers. Fertilizers are often used to develop adequate vegetation on exposed ground surfaces. Their application should be carefully controlled to prevent excess from being carried away with runoff waters. Contamination from petrochemicals such as oils, gasolines, and greases should be avoided by prevention of leaks, proper maintenance of equipment and disposal of waste containers. Solid wastes of all description are generated by construction activities. Collection and disposal practices should be kept up, with on-site disposal only when appropriate. If good care and attention is shown to these basic procedures, then many causes of stormwater pollution can be eliminated and more expensive structural measures may be unnecessary.

apb FORUM

NEWSLETTER OF THE AREA PLANNING BOARD OF PALM BEACH COUNTY 2300 PALM BEACH LAKES BLVD, WEST PALM BEACH, FL. 33 J9

SUMMARY OF 208 OUTPUTS REVIEWED